

CATIONICALLY CROSSLINKABLE COMPOSITION FOR PHOTOLITHOGRAPHY, ESPECIALLY STEREO-PHOTOLITHOGRAPHY - USING UV LASER ACTIVATED PHOTOINITIATORS COMPRISING ONIUM-, OXO-ISO-THIO-CHROMANIUM-, POLYSULPHONIUM- OR ORGANOMETALLIC COMPLEX BORATE(S) E.G. WITH EPOXY FUNCTIONALISED POLY-DI-METHYL-SILOXANE(S)

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PATENT FAMILY

Patent Number: FR 2757530 A1 19980626

Patent Number: WO 9828663 A1 19980702

Abstract: FR 2757530 A

Use for photolithography, especially stereophotolithography (SPL), of a composition crosslinkable by cationic means, particularly actinic activation, comprising (A) a primary material comprising at least one monomer and/or an oligomer and/or a polymer selected from (i) compounds containing at least one heterocyclic group having one or more electron donor atoms such as O, S, N and P and (ii) at least one ethylenically unsaturated group substituted by an electron donor atom which augments the basicity of the pi system, the compounds (i) and (ii) being crosslinkable by cationic means and (B) an effective amount of a cationic initiator system comprising as photoinitiator a product selected from onium borates of an element of groups 15-17 of the Periodic Classification [Chem. & Eng. News, vol. 63, No., 26 of the 04.02.1985] or an organometal complex of an element of Groups 4- 10.

USE - The liquid mixture of primary cationically polymerisable material and photoactivator is especially useful for the production of three-dimensional objects by stereophotolithography using actinic radiation, e.g. a UV laser beam, to irradiate the surface of a bath of the polymerisable composition to cause cationic polymerisation/crosslinking of the primary material and progressively immersing the polymerised portion in the bath to build up successive solidified layers to form a three dimensional solid object such as prototypes having the required geometry.

ADVANTAGE - The primary liquid composition has a low initial viscosity, allows production of three dimensional objects with low volume shrinkage using conventional stereophotolithographic equipment and gives solid objects having good mechanical properties.

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